



Applicant of :

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PETER J. WESTKAEMPER

Serial No. 139,576

Filed December 29, 1987

Hon. Commissioner of Patents  
and Trademarks  
Washington, D.C. 20231

Sir:

CONCENTRATED STABILIZED  
MICROBUBBLE-TYPE ULTRA-  
SONIC IMAGING AGENT

Group Art Unit 125

Examiner: Albert T. Myers

88DEC-5 AMI: 25  
GROUP 120

RECEIVED

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Kathleen Smith

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RESPONSE TO OFFICE ACTION

This is a response to the Office Action of September  
15, setting a 3-month response date of December 15.

Cancel claims 1 to 10 without prejudice for purpose of  
rewriting, and substitute the following claims:

1. A concentrated, storable ultrasonic imaging  
agent, comprising an aqueous parenteral medium containing a dis-  
persion of microspheres predominately of diameters less than 10  
microns, said microspheres consisting of gas microbubbles en-  
closed by solid walls formed from heat-insolubilized biocom-  
patible material, said imaging agent having a homogeneously  
dispersed concentration of greater than  $1 \times 10^8$  microspheres  
per milliliter, said microspheres being stable in said medium  
as evidenced by maintaining a concentration of greater than  $1 \times$   
 $10^8$  microspheres per milliliter for over 4 weeks at a tempera-  
ture of 20 to 25C.

2. The imaging agent of claim 1 in which said  
biocompatible material is a heat sensitive protein.

3. The imaging agent of claims 1 or 2 in which  
at least 80% of said microspheres have diameters in the range  
from 1 to 9 microns.

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